

THE
PSYCHOLOGICAL BULLETIN

THE EXPERIMENTAL STUDY OF MENTAL
FATIGUE.¹

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In the allotted time, I will try to point out (I) some errors and (II) some lines of progress in the experimental study of mental fatigue.

I.

1. Among the ideas which must be abolished, I count first the idea that fatigue is a concrete, homogeneous quantity of something which can be measured in terms of fluctuations in the efficiency of some particular work. While it may seem self-evident that it is erroneous, this idea in some form or other has nevertheless pervaded most of the investigations up to date. Few investigators seem to have had any glimpse of the constellation of factors of which fatigue is one and to which it is necessarily related. 'Nervous disease' was at one time supposed to mean something particular; now it means a thousand particular diseases, and is regarded more or less in connection with every disease. So fatigue must be conceived of in the light of its constituent elements, its concomitants, and its conditions before we can say that the experimental study has been founded.

2. The idea that fatigue is general. This idea is best formulated by Kraepelin and is sanctioned by him in the following words: "Fatigue through mental work is, so far as we know,

¹Read at the meeting of the American Psychological Association, St. Louis, December 29, 1903.

a general fatigue. As especially Weygandt's study on the effect of change in mental work has shown, the fatigue through a particular activity also reduces the capacity for such work as is brought about through quite different mental activities. Thus the necessity of rest and sleep arises at certain times regardless of whether the same or changing work has provoked it. Only the *difficulty* and not the *kind* of mental work is significant for the general extent of fatigue."¹

Here Kraepelin is evidently wrong both in regard to fact and in regard to the supposed significance of that fact. True, fatigue varies with the difficulty of the work, but it also varies with the kind of work. Kraepelin himself questions Weygandt's methods; and, even if we accept Weygandt's particular conclusions, *e. g.*, that it is not always restful to change from reading Latin to the memorizing of nonsense syllables, that is of little significance to us on account of the presence of so many common elements in the two processes. With crude means of measuring, one should experiment first upon large factors. During the past year the students in the Iowa laboratory have demonstrated by several lines of experiment that the kind and the degree of fatigue both depend upon the kind as well as the degree of mental exertion.

As regards the significance of this tenet, Kraepelin asserts that if fatigue varies with the kind of work, we must seek as many kinds of measurement as there are kinds of work. That by no means follows. If a watch were made automatically by a single machine, it would be necessary to have as many different machines as kinds of watches one wanted made; but if watches are made by common tools in the hands of intelligent workmen, it is possible to make many kinds of watches with the same tools. So, if the elements in fatigue are regarded separately, a large number of kinds of fatigue may be measured by a comparatively small number of means.

This error rests in part upon the first, although Kraepelin is perhaps as free from the first error as any experimenter has been. It seems like a desperate effort to meet a supposed practical situation—the need of general fatigue measures. The

¹ *Phil. Stud.*, XIX, 479.

fact that Kraepelin has fallen into this error is going to make it a persistent one.

3. The hope of obtaining results of wide practical value by gross measurements without a preliminary critique of method. The study of fatigue may lead to important practical results. That assumption has naturally had the effect that most of the carts along the road of progress have been ditched, for the simple reason that the cart was run before the horse; the attempt to draw practical conclusions at the first step has been put before patience and skill in adaptation of means.

Speaking of the *æsthesiometer* experiments on school children, Kraepelin says that the conclusions are 'in der Luft'; the essential truth to be found in them is such as the experimenter has read into them from his general knowledge. The *ergograph* method, the *Ebbinghaus* method, and others fall practically under the same ban. And here he is probably right. He might have gone further than he has in applying the same criteria to the large practical generalizations which are based on experiments upon adults for immediate practical purposes.

We have no right at present to waste time and energy in mass experiments upon school children, *e. g.*, for the purpose of laying a foundation of a reconstruction of school the curriculum, before we have legitimate means. I see two results of such experiments: they have aroused common sense observation of the curriculum (that is good); and they have brought discredit upon experimental psychology (that is bad). In saying this I would not discourage special fatigue tests on school children; but from sweeping conclusions to order, preserve us.

II.

The following seem to me to be legitimate and promising lines of progress.

1. The development of methods of measuring by which the mental work may be recorded for sufficient periods of time, in sufficient detail, and under conditions favorable for introspective interpretation. The mere discovery of a method of measuring a factor is an achievement in itself, and the report upon it should not be hidden in a vague preliminary reference to it in the

announcement of a generalization grounded upon some fragmentary intimation in the experiment. Where no two men can use the same method, there is no science. Our fathers laid the foundations for the discovery of truth in formal logic. Our duty is as much greater as our opportunities are greater. In no other department do I see more need of the development of a technique than in the study of fatigue.

2. The analysis of the fatigue curve under controllable conditions. Kraepelin has pointed the way in an admirable and encouraging manner. Given a continuous and detailed record of an hour's work, this may be analyzed into its constituent elements, as in the illustration he has given of an attempt to approximate a separation of the 'Uebung, Ermüdung, Anregung, Gewöhnung, and Antrieb.' (I give the German names because they have received specific definitions.)

3. The detailed examination of such factors as are necessarily interrelated with fatigue. Dr. Bair's study of the Practice Curve is a good illustration. Dr. Paul Ranschburg's study of Inhibition is another.

4. The detailed examination of qualitative, intensive, extensive, and temporal attributes of mental work; also the effect of different degrees of complexity and stability. The senses give us a qualitative series; characteristic differences in fatigue to sight, hearing, smell, etc., are evident. The psychophysics of each must be worked out separately, but with a wholesome reference to the whole. There are salient differences in fatigue after emotional work, intellectual work, and exertion of the will.

It is also possible to isolate fairly characteristic types of complexity, first, as regards richness of consciousness, and, second, as regards mental level.

Then again distinctions may be made on the basis of organic stability of the process, as when we compare instinctive activities with those which involve radically new organization.

5. The correlation of psychological and underlying factors, such as physical, chemical, histological, and electrical phenomena. If the attention wave varies with fatigue, as Professor Pillsbury has demonstrated, we may ask, what are the physiological factors which condition that variation? What feature

in the mental work is it that causes the physiological state? What chemical processes may be traced? What is the cell modification? Are there characteristic electrical variations?

6. The analysis of the individual fatigue-resistance. The same work exhausts different individuals in different ways as well as in different degrees. In this fact lies a long series of problems. What are the weak points in the individual power of resistance? May these be reduced to types? In other words this involves the diagnosis of exhaustion-psychoses of common forms, such as occur in ordinary life. But here, as in all other psychology, individual psychology is futile unless based upon a developed general psychology.

7. The analysis of concrete experience, *e. g.*, a school period, for the purpose of applying the principles of fatigue. We may ask, what fatigue processes are in action? By what are they counteracted, apparently and actually? What senses have functioned, and under what conditions? What is the nature of the emotional coloring, what rhythms are present, and what are their relations to the individual temperament? What other elements of change are involved, and under what conditions of sequence, concomitance, and combination do they occur? In short, instead of lumping the activity as a chaotic mass, the activity may be analyzed into its constituent elements and its conditions traced. Then we are prepared to apply the laws of fatigue synthetically.

This program rests upon sentiments which are expressed after a careful review of the work up to date, and after some experimenting. It seems worth while to express these 'sentiments' in view of the fact that there is current a healthful tendency to make concrete situations in life the object of psychological study and that this will give an impetus to superficial and misdirected experiments regardless of previous failures. The program is a plea for foresight, a comprehensive view, patience, and results that shall have wide practical application, especially to the economic distribution of mental work.

PSYCHOLOGICAL LITERATURE.

RECENT TENDENCIES IN THE THEORY OF THE PSYCHICAL AND THE PHYSICAL.

Theory of the psychical and the physical presents many phases in recent thought. On the one hand, the problem is still discussed more or less in its original ontological form, in which mind and matter are regarded as different orders of existence, one being more real than the other, or both being equally valid phases of an underlying reality. The writings of Schultz, Strong, Marvin, and Stratton illustrate this tendency. The chief difference between recent and older writings of this sort is that the arguments have become more detailed and more subtle. On the other hand, the problem is being approached by certain other writers rather from the methodological point of view. The attempt is made to get back of the problem as it is ordinarily stated, in the hope that an investigation of the setting of the problem may suggest the line along which to seek a solution. In this group may be put the recent writings of Ostwald, Maudsley, Forel, Baldwin, Adamson, Mackenzie, Ladd, Mead, Dewey, and Bawden.

Of course, it is impossible in any absolute way to separate the ontological and the methodological sides. Nor do these recent discussions reveal any such complete separation. But there is an evident tendency to free the methodological statement sufficiently to objectify the problem. The very significance of the shifting of the attention thus to the presuppositions of the problem is that thereby we get a better understanding of the problem itself, *i. e.*, the methodological considerations are instrumental, not final. What the ultimate solution, in terms of some new conception of the nature of the problem, will be, it is perhaps premature to attempt to foresee. But that this is the true logic of the current controversies is shown in the attempt of such a writer, for example, as Ostwald¹ to reinterpret the whole of reality from the dynamic standpoint, *i. e.*, from the standpoint of the energetic physics. And if recent psychology is right in its insistence upon activity as the fundamental category of experience, and in its insistence that all conscious states are acts, here is a basis for the reinterpretation of the whole philosophy of the psychical and the physical.

¹ W. Ostwald, 'The Philosophical Meaning of Energy,' *International Quarterly*, Vol. VII, No. 2 (June-Sept., 1903), pp. 300-315.

Professor Ostwald conceives of consciousness as related to neural energy somewhat as motion or work is related to the lower forms of energy. The transition from the neural to the psychical is the same in principle as the transition from the physical to the neural. But consciousness is not identified with all forms of energy, only with neural energy in the organism and then only under certain conditions. To the objection that the psychical is not amenable to description in terms of energy, he replies that the concept of energy is itself much more 'geistig' than it is material in its implications, and, furthermore, that all our attempts to conceive the psychical in other terms have uniformly failed or landed us in unintelligible paradox.

He says that the difficulty of psychophysical parallelism grows out of an erroneous statement of the problem. Going back to this concept of energy, which he regards as having rendered unnecessary the concept of matter, he would generalize it for a dynamic interpretation of the whole of reality. From this point of view, an atom is rather an equilibrium of forces than a material unit in the old sense of that term. On the same principle, the concept of mind as a separate existence or substance is rendered unnecessary, or, as he puts it, the concept of the psychical is 'subordinated' to the concept of energy.

In other words, he defends a doctrine of psychical energy, 'only we must perforce regard it as much more complex and difficult to state the conditions under which psychical energy arises than those concerning the rise of electrical energy.' "I deem it possible to subordinate to the idea of energy the totality of psychical phenomena." "In all that we know of intellectual processes, there is nothing to hinder us from regarding them as a particular form of energetic activity" (p. 313).

In various quarters the energetic theory is making itself felt as a philosophical doctrine, and we may expect in the near future a reinterpretation of many of our fundamental concepts, in philosophy as well as in science, from this point of view. The main defect in Professor Ostwald's doctrine, as pointed out by the present writer in another place,¹ is in demanding that the reconstruction of the concepts shall take place too exclusively on the psychological side. The reconstruction must be mutual. The concepts of physics need to be revised in the light of psychological categories as truly, though possibly not so extensively, as those of psychology by physics.

¹ Bawden, "The Necessity from the Standpoint of Scientific Method of a Reconstruction of the Meaning of the Psychical and the Physical," *Journ. of Philos., Psychol. and Sci. Methods*, Feb. 4, 1904, pp. 62-68.

It is interesting to find the emphasis thrown upon methodological considerations by Maudsley in his recent book, '*Life in Mind and Conduct*.'¹ Only an insight blurred by the astigmatism of prejudice will fail to see more than a mere materialism in the following utterances. "Nobody nowadays resents the notion that the bread which he eats is converted into bodily strength and energy, but most persons, being wholly ignorant of minute matter and its forces, deride the notion of its conversion into mental energy, albeit the scientific theories of ether-waves and ether-whorls tend steadily to render the conception less startling" (p. 24). "That physical and chemical activities stop abruptly at the edge of a living particle is simply incredible; it is easily credible that, entering it, they undergo a change into new and stranger complexes" (p. 26). "Such orderly transition does not mean that life is no more than physics and chemistry." "As if, forsooth, life would suffer depreciation and not be the wonder it is to its conscious self by being linked in unbroken continuity with physics and chemistry, and to trace the evolution of one thing into another were to say that the one thing is the other" (p. 27). "Now to say of one mind that it thinks differently on something from another mind * * * is to say that the structure of it in relation to the object differs. * * * For in no case is the object which is perceived and thought either outside or within *the* mind, as ordinary language implies, it is *mind* then and there active, the synthesis or product of subject and object, the *thing* and the *think* in one: there exists no separate mind to lay hold of and think on an external object, but a concrete brain brought into suitable contact with the particular external object makes the particular thought or mind" (p. 40-41).

The current parallelism in many instances really stands nearer to materialism, in regarding the mind as a thing, than does much of the modern materialism so-called. The latter speaks of consciousness as the property of a particular structure, the brain, regarding consciousness as simply the name which we apply to a certain interplay of energies in that organ. If this involves a radical revision of our conception of the nature of energy, the sting of materialism is drawn.

Forel² defends the identity theory as against parallelism and emphasizes the former as the only legitimate and indeed the indispens-

¹ H. Maudsley, *Life in Mind and Conduct*, 1902, Macmillan, especially Chapters I. and II.

² A. Forel, 'Beispiele phylogenetischer Wirkungen und Rückwirkungen bei den Instinkten und dem Körperbau der Ameisen als Belege für die Evolutionslehre und die psycho-physiologische Identitätslehre,' *J. f. Psy. u. Neurol.*, I., 3, pp. 99-110.

able metaphysical basis for comparative psychology. He criticizes the parallelistic theory under cover of which such men as Bethe, Loeb, and others develop a purely mechanical interpretation of animal behavior. His own account of the identity theory is not altogether consistent but is preferable, to his mind, because it makes it possible to carry down the psychological interpretation to these lower forms. That parallelism is often accompanied by a virtual materialism is without question, and is a further reason for looking for the solution of this problem along the line of reflection upon the scientist's technique rather than by the adoption of any particular brand of metaphysics.

A number of books have appeared in the last three years of a general nature in philosophy in which the authors have defined their positions on this question. Professor Mackenzie, in his *Outlines of Metaphysics*,¹ from the standpoint of a *genetic idealism*, regards all existing theories as to the relation between mind and matter as unsatisfactory, crude, and even absurd, because they "leave the most fundamental problem untouched, that of really understanding what mind and matter mean for us. What we have to do is rather to take these as elements in the totality of our experience, and to try to see what place belongs to each within the concrete system of our world. They are not themselves terms which can be used in any ultimate solution of the universe, but rather names for certain aspects of that reality which it is our business to try to understand" (p. 93).

Similarly the late Professor Adamson, in *The Development of Modern Philosophy*,² says: "It must, therefore, be considered whether the relation really involves any such independence [of the two realms], whether we are not exaggerating a partial truth in representing body and mind as two series of events, two distinct realms of existence, which come somehow into combination. Certainly our general methodical maxim, nowhere to admit in reality an absolute division, would lead us in the contrary direction. Whatever independence they appear to possess must not be absolute. Both must be capable of representation as forming parts of one and the same process of actual existence. Whether the mode of describing the mental life which gives it the position in our consciousness of a realm of existence distinct from and, as one puts it metaphysically, outside of the mechanical, is not a misreading of the actual nature of the inner life itself" (Vol. I., p. 354). "There seems, then, nothing to contradict * * *

¹J. S. Mackenzie, *Outlines of Metaphysics*, Macmillan, 1902.

²R. Adamson, *The Development of Modern Philosophy, with Other Lectures and Essays*, W. Blackwood & Sons, 1903, espec. Vol. I., pp. 338-358.

the supposition that, in the process of change, a certain configuration has this character of inner reference which constitutes the fundamental feature of psychical existence" (Vol. I., p. 356).

And Professor Baldwin, in his recent writings,¹ has called attention chiefly to the setting of the problem. His theory of 'genetic modes' outlines a new standpoint from which to approach the whole subject, and is a good illustration of what is meant above by the shifting of the interest to the methodological phase. In this doctrine the teleological factor is given a fundamental place in the conception of scientific method, and this has its implications for the revision of our conceptions of both matter and mind.

In an article on 'Mind and Body from the Genetic Point of View,'² he discusses the relationship of mind and body from the standpoint of the genesis of the distinction in individual development. The distinction first appears reflectively in the third of his three stages: objective, subjective, ejective. Here the concepts of mind and matter appear as strictly correlative and at the same time incompatible or incommensurable. Hence the author defends parallelism as against interactionism. But he recognizes that this is not a solution of the problem of their relation, and outlines, in a tentative way, his own solution which he calls 'æsthenomic idealism'—'that in æsthetic appreciation we reach a form of immediacy of experience in which the dualism of external and subjective is blurred and tends * * * to disappear' (p. 246).

One point in Professor Baldwin's discussion is of great importance, his critique of the idea of 'the supposed primacy of the subjective.' It does not follow 'that because the world as well as the self, the body as well as the mind, is a construction from data of presentation—that therefore, the subjective factors are entitled * * * to greater primacy and ultimateness with reference to the universe as a whole than those which we ordinarily denominate objective and external' (p. 225-6).

Another important conception in Professor Baldwin's article is the distinction, with which he has already made us familiar in his other

¹J. Mark Baldwin, *Dictionary of Philosophy and Psychology*, Macmillan, 1902, art. 'Mind and Body'; same in *Development and Evolution*, Chapter IX. (in part).

²PSYCHOLOGICAL REVIEW, May, 1903, Vol. X., No. 3, pp. 225-247.

³This seems to be the source of the misunderstanding of the 'functional view' of the relation between the psychical and physical by Professor Creighton, in his article on 'The Standpoint of Experience,' *Philos. Rev.*, Nov. 1903, espec. pp. 607-610. See critique of this article by Miss Kellogg, below, in this number of the BULLETIN.

writings, between the agenetic (equational) and the genetic (progressional) statements of the nature of reality. This distinction he otherwise expresses by the antithesis between the retrospective and the prospective, the mechanical and the teleological. Of course, such a distinction is itself only a new dualism, but it has this superiority that it is a dualism of method, not of existence. On the side of method, this question of the relation between the agenetic and the genetic statements of experience is just the deepest problem of the present logic of science. The great value of such a discussion as this of Professor Baldwin is that here the problem may fairly be said to have consciously entered into the methodological phase.

The instrumental character of the distinction is brought out most clearly in the recent writings of Professor Dewey and Professor Mead. While not giving an explicit exposition of the subject, Professor Dewey's point of view may be gathered from the discussion in his *Studies in Logical Theory*.¹ He here outlines a standpoint which we find developed in detail in Professor Mead's article on the 'Definition of the Psychical.'²

Professor Mead approaches the question from the standpoint of the functional psychology. He undertakes to show the true meaning of objectivity and subjectivity, and to show the meaning of the psychical in relation to these. "The subjective is that which is identified with the consciousness of the individual *qua* individual." "Objectivity is the characteristic of a cognitive process which has reached its goal" (p. 77). "The definition of subjectivity will depend upon the function which a theory of logic ascribes to the individual consciousness in the formation of the judgment" (p. 78).

The views of Wundt, Külpe and Münsterberg, on the one hand, and of Bradley, Ward, Stout and James, on the other, are examined and discussed. He restates the problem, after an exposition and criticism of their views, in the following form: "Shall we assume, with Wundt, that the psychical elements arise from the analysis of reflection and that the result of that reflection is to substitute for the original object, first, a conceptual physical object which never may be actual — may never be presented — and, second, a still actual psychical content which has been withdrawn from the object (Münsterberg's position here is methodologically the same); or shall we say with Külpe, that in a unitary experience reflection *reveals* a mechanical

¹ *University of Chicago Decennial Publications*, Second Series, Vol. XI., espec. pp. 38-39, 52-54, 127.

² *University of Chicago Decennial Publications*, First Series, Vol. III., Part II., pp. 77-112.

and an associative order, of which the mechanical or physical statement is methodologically the determining side, by relation to whose elements all the associative or psychical elements must be determined as correspondents, recognizing further that reflection reveals — does not create — this distinction, since ‘images,’ feelings, and volitions have always been necessarily subjective; or with Bradley and Bosanquet, shall we consider the psychical merely the phenomenal appearance of the material which, to be cognized or rationally used in conduct, must cease to be psychical and become universal, and maintain therefore that reflection does not create or reveal the psychical, but ceaselessly transforms it, and that the psychical is an abstraction which can never appear in its own form in a cognitive consciousness, but must remain simply a presupposition of the theory of the attainment of knowledge by the individual; or with Ward, shall we assert that the subject of psychical experience and of objective experience are the same, that the transcendental *ego*, who has masqueraded in ethereal clothes in a world all his own, is nothing but the everyday *ego* of psychology; above all, that he is to be unquestioningly accepted as one phase of the subject-object form of experience, although he is neither the empirical self of psychology which can be an object, nor yet a mere ‘function of unity,’ and although, further, this pious refusal never to put asunder subjectivity and objectivity is in crying opposition to the fact that half the time subjectivity signifies the denial of objectivity, and although it is not possible consistently to define the psychical by its reference to the subject end of a polarized experience when the subject is hardly more than an assertion which perpetually dodges definition; or with James, shall we take up again with the soul and a dualistic theory of knowledge, in order that the psychical may mirror the whole possibly known reality, and when we have entered into this rich heritage, shall we promptly send the soul into another and a metaphysical world and politely dismiss the dualistic theory of knowledge as a great mystery, while we dally with plural selves and spend our psychical substance in phenomenalistic analyses and teleologically constructed objects; or shall we attempt some other definition of the psychical which will orient it with reference to immediate experience, to reflection, and the objects and conduct that arise out of reflection, and which will vindicate the relation of the psychical to the individual and that of the individual to reflection” (pp. 92-93)? His readers may be thankful that Professor Mead did not add the weight of his own theory to the already overburdened sentence which we have just quoted.

In his own theory, he says, "it is possible to regard the psychical, not as a permanent phase, nor even a permanent possible aspect of consciousness, but as a 'moment' of consciousness or in a conscious process, and which has therefore cognitive value for that process" (p. 93). The question of real importance, in his view, does not concern the content of the psychical, but the way in which it appears. The psychical, negatively viewed, appears as the break or interruption in action. Viewed positively, the psychical is the process of the interaction of the various contents in the process of their reconstruction. "A successfully thrown ball means to us distance covered, weight of the ball, momentum attained, an entire objective situation. A mistake in the weight of the ball will give rise to a disorganized phase of consciousness, which will be subjective or psychical until it is readjusted" (p. 102). This psychical process of readjustment Professor Mead identifies with the copula of the logical judgment.¹

Professor Ladd, in a *Brief Critique of Psychophysical Parallelism*,² maintains that 'the hypothesis of psychophysical parallelism sorely needs reëxamination by its advocates,' and that 'it cannot be stated in any form which will satisfy the demands for explanation of the phenomena.' He, also, starts with the dynamic character of experience, within which there is a '*diremption* of the experienced phenomena by the activity of the discriminating consciousness' into things (including the body) and the self. These two 'classes of phenomena, or experiences,' appear to be related, and the relation *seems* at least to be an ontological one, a causal relation. This ontological way of regarding the relation is most deeply rooted in our very nature. It is the source of all philosophizing. "When, then, either physicists or psychologists, or both acting in conjunction, deny the validity of the ontological interpretation of the psychological facts, they * * * should be called sharply to account." "Not one of the modern advocates of the hypothesis * * * has ever given evidence of having bestowed the needed criticism upon the categories which the statement of the hypothesis necessarily involves" (p. 377). The very idea of a *parallelism* of the psychical and the physical is 'either unintelligible, or

¹ Three papers by the present writer, which interpret the distinction functionally, may be mentioned in this connection as representing this same general point of view: Bawden, 'The Functional View of the Relation between the Psychical and the Physical,' *Philos. Rev.*, Sept. 1902, pp. 474-484; 'The Functional Theory of Parallelism,' May, 1903, pp. 229-319; 'The Meaning of the Psychical from the Point of View of the Functional Psychology' (shortly to be published in the same journal).

² *Mind*, July, 1903, pp. 374-380.

inadequate, or plainly false.' "The explanation which discriminating 'ontological consciousness' gives of this experience refers the two classes of phenomena, thus related, to two real beings * * * reciprocally influencing each other in a unique way" (p. 378). "What science discovers is not 'parallelism' but an infinitely subtle and complex network of relations." The emphasis in this paper, also, is on the presuppositions of the problem, but with an obvious leaning toward the interactionist and ontological interpretation.

Professor Stratton also comes to the defence of interactionism in Chapter XIV. of his *Experimental Psychology and Culture*.¹ He criticises parallelism from three sides: from the standpoint of physiological psychology, from the special difficulties presented by the case of sense-perception, and from the standpoint of the theory of evolution. Under the first point, the history of cerebral localization is cited as supporting the view that consciousness must be in some sense the cause of action. The second is a critique of parallelism. The third is the argument of F. H. Bradley, that parallelism is 'a doctrine of the uselessness of the soul.' His own positive arguments in favor of interaction are: (1) that there may yet be discovered a quantitative causal relation between stimulus and sensation. Elsewhere in the book he says that extensity is an attribute of all consciousness and makes this the basis for asserting the possibility of mental measurement in the literal sense. (2) Causation simply means sequence, hence by consciousness 'we mean simply the total set of circumstances under which any event regularly occurs'; therefore 'mental events may be, on occasion, numbered among the causes of physical acts, and *vice versa*' (p. 286). (3) Solomon's argument that interaction is not inconsistent with conservation of energy, since 'the influence of the mind might be, not to add to the energy of the brain in any way but simply to redispense it' (p. 288).

What, to the reviewer, seems the most important consideration in these arguments is the basal assumption as to the nature of mind, which runs through them all. On a previous page this is made explicit. "We all have an instinctive feeling that our mind reaches out into our very skin, and is in the actual presence of the objects that touch us. * * * But the more prosaic, and yet, after all, more wonderful fact is that the mind receives only indirect reports of what is going on without. The cortex of the brain, with which our consciousness is connected, lies in darkness, deep in its coatings of tough membrane and skull and flesh, and connected with the outer world only through the medium of long and delicate fibers that bring in

¹The Macmillan Co., 1903.

messages from the outposts of sense. It is as if a person were secluded in an inner chamber and learned of the outside world only by an inconceivably elaborate system of wires and signals. * * * The mind must distinguish the various impressions from different parts of the skin, or from the innumerable points on the surface of the eye, and refer each to its proper place in the external world" (p. 123-4). The same assumption seems to underlie the author's contention that the psychical has both the qualities of duration and extensity (Chapter III.) which have been denied it, for example, by Professor Münsterberg.

He criticizes parallelism as follows: "Sense-perception is the crux of parallelism and will some day, I fear, be its death. * * * When you are startled from a reverie by some crash in the street, caused, let us say, by a falling sign, your sudden mental impression (this theory has to assume) is not caused by the physical disturbance without, but by some mental processes essentially disconnected with the outer world. While physical nature has been rusting away the fastenings and stirring the wind that brings down the sign, the inner processes of your own mind * * * have been silently preparing to call forth sound-sensations * * * just in the nick of time when the sign falls * * * When one remembers that not a shred of evidence exists of any antecedent mental processes that might cause the sensations of noise * * * he begins to appreciate something of the enormity of this theory" (pp. 280-1).

Sensation and volition are the test cases for any theory. They are, as it were, half in and half out of consciousness. At least this is the implication of much of our current psychology, in which the stimulus and the response are conceived as extra-mental, while the sensation and the idea (or volition) are the intermediate mental occurrences. Sensation is viewed as a mental state stimulated from without and the volition as a mental state which in some unknown way produces or is accompanied by an outward overt act. But, as Professor Dewey and Professor Mead have pointed out,¹ the fundamental assumption here is wrong. Stimulus and response (ether vibration and muscular contraction, for example) form a continuous series with what we call the intermediate inner process, and ought to be interpreted from this standpoint. Conscious states are acts as much as ether waves or muscle twitchings. Only from this point of view is it possible to avoid the pseudo-problems which otherwise appear, of which this citation from Professor Stratton's book furnishes an instance.

¹ See discussion of this point in Professor Mead's paper, pp. 98 f.

According to Professor Marvin,¹ the physical stimulus (the cause) has a twofold effect, a brain-state and also a sensation. The latter is wholly different in kind from the former, yet the law of causality (which here also is identified with mere sequence) is conceived to hold between these two otherwise incompatible facts or events (p. 279). Elsewhere in the same book (*e. g.*, p. 176), however, he seems to support a purely mechanical or 'scientific' conception of psychology. "Ultimately science must hold that its ideal explanation of mind would be physical." "Our mental life must be interpreted ultimately in relation to the physical world." "The ideal psychology is a physiological psychology."

Professor Walter Smith² tells us that "the objects of cognition, so far as given in cognition, are not to be distinguished from the soul. The proposition, 'the soul is red,' seems absurd only when a pigment is thought of as something separate from consciousness, and the soul is likewise regarded as a surface abstracted from thought. As a matter of fact the redness is not in the object; it is in a state of consciousness. The qualities of things are given to us in terms of our conscious life. The mind which sees red is in that act red. And in the same way, extension is an idea or a conscious experience, and therefore the thought of extension is an extended thought. To quote Mr. F. H. Bradley, 'The idea of the extended has extension, the idea of the heavy has weight, the idea of the odorous has smell.'"

According to Schultz,³ we must go back to the Kantian standpoint for a true solution of the problem. He approaches the problem from the standpoint of the transcendental idealism. There is only one reality and this is idea. There are not two phenomenal manifestations of this reality, but two different modes of knowledge or ideas. These forms of knowledge are metaphysical *a priori* elements of consciousness — conditions of the very possibility of experience. These forms or ideas are of two sorts: the one ordered in time (our sensations and thoughts); the other ordered in space (the objects of the external world, including my own body). Both are ultimately subjective or mental, but the latter have the peculiarity of externalizing as objects. The problem of the relation between brain and consciousness is thus the problem of the relation between these two kinds of ideas.

Like Kant, he finds the connecting link between the two in time. The relation between brain and consciousness is a temporal parallel-

¹ W. T. Marvin, *Introduction to Systematic Philosophy*, Macmillan, 1903, espec. Chaps. XIV., XVII., XX., XXX., XXXI.

² W. Smith, 'The Idea of Space,' *Philos. Rev.*, Sept., 1903, p. 503.

³ P. Schultz, 'Gehirn und Seele,' *Zeitschr. f. Psy. u. Physiol. d. Sinnesorg.* XXXII., Heft 3, u. 4, pp. 200-258.

ism. His discussion of the Kantian forms of perception is a good illustration of the limitations of the view. He uses the figure of a lens whose refracting surfaces determine the form which the light rays take in passing through it. 'This form,' he says, 'is given once for all; it is there before light rays fall upon it and it matters not whether they ever do fall upon it; it is before all experience and given independently of all experience' (p. 218). This appeal to 'Urformen' of the mind as lying logically back of all spatial and temporal experience, and thus conditioning the very possibility of a science of objects in space and time, is defective chiefly in that it treats the psychical as a fixed content. Why this *a priori* character in the relations of the subject to the object which is not reciprocated in the relations of the object to the subject?

He makes much of the distinction between things which can be *perceived* and things which can be *thought* only. We can think the hyper-space of the metageometry, but we cannot perceive it. We can think the psychical and physical as parallel but we cannot perceive such a parallelism. Two things to be perceived as parallel must lie beside one another in space. But the psychical is not spatial, hence the parallelism cannot be one of perception, but one of thought only.

The author follows Kant also in saying that psychology cannot be a science in the strict sense because it cannot state its phenomena in exact quantitative form (p. 240 f.). He calls attention to the peculiar fact that it is just where the psychical facts, on general agreement, are most immediately given, namely in one's own consciousness, that the methods of exact science break down or are inadequate. But the question is, Is this to be interpreted as expressing some inherent peculiarity of these facts, which renders them incapable of exact investigation, or does it simply reflect the imperfection of our present scientific methods of dealing with such a complicated subject-matter? The inherent limitations which Schultz finds grow out of the ontological view of the nature of consciousness which, in spite of his disavowal, really underlies his discussion.

The real issue appears in the following sentence: 'Aber die körperliche Natur ist nur ein Teil, ist nicht die ganze Natur' (p. 240). Of course the material world is not the whole of nature if by material one means the blind, inert, mechanical side, leaving out the intelligent, dynamic and purposive. But it is just the significant advance in the physical-scientific view of the world that in the idea of energy we are reading back into nature these very factors which in the older view of the 'material' world were excluded. The problem is the deeper one

of reconstruction of fundamental concepts in physical science. 'Back to Kant' has often served its useful purpose both in philosophy and in science just because Kant was in so many respects ahead of the philosophy and science of his age. But there are coming to be some problems which can no longer be solved by harking back to the transcendental idealism of the great Königsberger, and this problem of the relation of the psychical to the physical is one of them.

Last but not least, we come to the theory of 'psycho-physical idealism' so ably expounded by Professor Strong in his recent book, *Why the Mind has a Body*.¹ It deserves a more extended discussion than is possible within the limits of this article. The attempt will be made to deal only with certain points of a general nature.

The standpoint is one which had been put forward by Dr. Morton Prince in certain writings² a number of years ago, but it receives an entirely independent treatment by Professor Strong and is set forth in a most attractive and persuasive form. It is, as some one has said, 'idealism that out-Herods Herod.' The world is a world of things-in-themselves, and these things-in-themselves are conscious experiences. This, the author says, is the true panpsychism. Matter, organism, brain-states are symbols only. The contrast between the mental and the physical is that between reality and phenomenon, substance and shadow. Your brain is simply a shadow cast by my consciousness. My brain, if I could see it, would, likewise, be simply a shadow cast by my own consciousness, which is the reality. Thus are the tables turned on epiphenomenalism.

A query is apt to arise in the minds of some readers right at the start, with regard to the title of the book. Perhaps the author intended it to be so. It would seem, on any assumptions that the biologist at the present time is willing to make, that it is equally relevant to ask why the body has a mind. The biologist to-day regards it as possible to give a scientific explanation of an organism without any direct reference to consciousness. To many lower organisms, in fact, he even denies the presence of consciousness. There are few who are willing to maintain that even the highest plants have a mental life. Most of the scientists who speculate on the problem regard the mental and the conscious as having arisen out of non-mental and unconscious nature by some as yet unknown process which does not conflict with the law of interconvertibility of energy. The scientific biologist, in other words, generally assumes, if he does not frankly assert, that there

¹ C. A. Strong, *Why the Mind has a Body*, Macmillan, 1903.

² Cf. discussion between Dr. Prince and Professor Strong in the *PSYCHOLOGICAL REVIEW*, Nov. 1903, pp. 650-658; Jan. 1904, pp. 67-69.

were organisms before there was consciousness, that there was body before there was mind. This is the very obvious implication of the nebular hypothesis and of evolution by natural selection. The problem for the biologist thus would seem to be why the body has a mind.¹

The author, in the preface, promises that his theory will enable us 'to settle the controversy between the interactionists and the parallelists in a way satisfactory to both parties.' This adds zest to an appetite already keen from a reading of the title and a glance at the table of contents. And whatever one's final decision with reference to the substantiation of the author's claim, the reader will follow the argument from cover to cover with an unfailing satisfaction with the way in which it is said.

The author presents a somewhat new classification of theories. He first classifies them as realistic, dualistic, materialistic, idealistic, spiritualistic and phenomenalistic. These are ultimate or metaphysical theories. He then rearranges them to correspond with the empirical mind-matter theories which he sets forth in the first part of the book. These empirical theories are: (1) interactionism: (a) psychophysical dualism (naïve and critical), (b) psychophysical phenomenalism — interactionist form. (2) Automatism: (a) psychophysical materialism (naïve and critical), (b) psychophysical phenomenalism — automatist form. (3) Parallelism: (a) psychophysical monism (mind and body equally real or unreal), (b) psychophysical idealism (mind real and body phenomenal — the author's view).

The deepest gulf is that between parallelism and its rivals. "The great question is not in what direction the causal influence runs, but whether the relation of mind and body is such as to permit of causal relations at all" (p. 4). The author finds the reconciliation in the doctrine of psychical causality. He denies that physical causation is the only type of causation. The parallelism, he says, extends to the causal relations (p. 85). The theory reveals its ontological character, of course, at this point.

The value of the doctrine thus turns upon the general conception of reality and of consciousness. Reality is defined (on p. 194) as 'something that exists of itself and in its own right, and not merely as a modification of something else.' Material objects are denied reality because they are dependent upon consciousness, while consciousness is asserted to be a reality because it 'exists in its own right,' and is not, in turn, dependent upon these objects.

¹ And Professor Baldwin's account of the genesis of the distinction in the individual would suggest that the problem is just as relevant in this reversed form there also.

But does not this really beg the whole question, since consciousness itself is just the subject-object relation? Of course, if consciousness is taken in the exclusive sense, as including objects-of-consciousness, it is reality that 'exists in its own right,' since it is just everything. But if consciousness is taken as the form or process of experience, as contrasted with its content of objects, then consciousness is just as much of an abstraction (and therefore dependent) as material objects.

The same difficulty appears in the author's view of the relation of the individual mind to other minds. His atomic view of the individual mind leads him to reject phenomenalism, which tends to solipsism, and to accept the existence of things-in-themselves. "Thoroughgoing phenomenalism makes no provision for knowledge of the minds of other men and animals" (p. 215). But are minds mutually exclusive, as both of these theories assume? The question here is really a genetic one — psychogenetic and sociogenetic. What is individuality? Are there any different grounds for believing in a fixed psychical individual than for believing in a fixed biological individual? Before we can adopt either the phenomenistic metaphysics or the metaphysics of things-in-themselves, we must have some clear notion of what we mean by the individual and how the distinction of the individual and society (other individuals) arose, starting from a stage in which these are still fused or merged. We must ask what is the function of individuality in the conscious life of the race.

As would be expected, metaphysics, on this view, is essentially different in principle from science. "The two are different in kind and mutually independent * * * asking unlike questions" (p. 231). "Metaphysics differs fundamentally from empirical science in that it takes cognizance of and investigates a kind of knowledge never dreamt of by the latter, namely, knowledge of the non-empirical. As the real universe falls apart into two contrasted segments, my consciousness and what is not my consciousness, so there are inevitably these two kinds of knowledge, these two opposite positions of the mind towards reality" (pp. 231-2).

In conclusion, attention may be called to the striking differences of opinion which prevail upon almost every phase of this subject, differences only partially illustrated in the views here brought together. This in itself is hopeful only as suggesting that the problem is passing into a new phase. On the one side, we see fundamental principles like those of causality and conservation of energy brought into question and attempts made so to restate them as to account for the psychical as itself an efficient form of energy, consciousness even being

endowed with extensity in the hope that this will bridge the gap. On the other hand, the transcendentalists and phenomenologists agree in affirming the utter incompatibility and incommensurability of the psychical and the physical, some asserting and others denying the timeless and spaceless character of consciousness. Interactionism still has its advocates, but they have not met the objections of the parallelists. But on the other side, the attempt to keep parallelism as a scientific hypothesis separate from parallelism as a metaphysical doctrine has signally failed, those who have most strongly defended this distinction themselves falling into metaphysical snares the more harmful because unsuspected.

In a general way, it may be said that the concept of function is superseding that of cause in the conception of the problem, with the result that attention is being turned from the problem as stated in its historical forms to a study of the terms of the problem and what they imply. This turning to the methodological presuppositions of the problem is most promising, and suggests that its true solution will be found in the very process of thus attempting to restate it. To the present writer, it seems that the difficulty as to the nature of the soul resolves into the question of the re-thinking of matter in more dynamic terms. The concepts of 'mental activity,'¹ 'mental process,' 'the stream of thought,' all show that consciousness is coming to be conceived in more dynamic terms. Consciousness is action in its reconstructive phase, and psychology is the attempt to state the laws of a psycho-mechanics, the conditions and the limits of tension in the reconstructive phase of action. And the doctrine of 'unconscious mental states,' which has come in for so large a share of discussion in recent controversy over this subject,² becomes significant as indicating this irresistible movement toward the re-thinking of both sets of categories, each in terms of the other. Such phrases are, of course, mere contradictions in terms until we see in them this implicit recognition of the essential identity of the psychical and the physical. Not until physical science (including biology) and psychology get together in the investigation of reality in the use of some such concept as activity, energy, action, process, will such palpable absurdities as 'unconscious feelings' and 'unconscious ideas' vanish before the light of a true scientific analysis.

¹ Cf. Bawden, *The Brain in Relation to Mental Activity*, New York Teachers Monographs, Vol. IV., No. 4 (Dec., 1902), pp. 35-45.

² Cf. Stratton, *Experimental Psychology and Culture*, Chaps. IV. and V.

H. HEATH BAWDEN.

VASSAR COLLEGE.

Geist und Körper, Seele und Leib. LUDWIG BUSSE. S. 482. Leipzig, 1903.

The author has already taken an active part in this 'Streitfrage' by articles in the *Zeitschrift für Philosophie und philosophische Kritik*, of which he is the editor, as well as in several brochures bearing directly on the subject. In this work he has undertaken two main tasks: (1) To give a statement of all the possible theories relating to the connection between mind and body, and (2) to establish his own theory which is that of interactionism and simultaneously to refute the various forms of the rival hypothesis of parallelism. The first task is performed very carefully and impartially. As to the execution of the second, we cannot think that the author has been more successful than on previous occasions in driving parallelism from the field.

Having proved to his own satisfaction that parallelism cannot be put forward merely as a working hypothesis, but that it involves a metaphysical doctrine; further that the parallelism between physical and psychical must be of a thorough-going and universal character, which brings with it as a necessary consequence panpsychism; and that it is most in harmony either with a realistic monism such as Spinoza's or with a complete dualism (pp. 67-118), Professor Busse proceeds to a detailed examination of the doctrine extending over two hundred and fifty pages. The assertion put forward by Paulsen, amongst others, that psychophysical parallelism is a necessary consequence of critical phenomenism or transcendental idealism, he regards so far from being established that he considers it may be questioned whether the two doctrines are mutually compatible. But the argument that critical idealism, by making the material world a phenomenon of mind, cuts at the root of the parallelism which was designed to meet the difficulty of the connection between physical and psychical, there being then no longer two different 'things' to correlate, seems to prove too much. For it would follow similarly on any idealistic, just as on any materialistic basis, that there could then be no problem of interaction.

The modern interpretation of the principle of causation has been frequently held by recent writers to exclude the possibility of an interaction between physical or physiological events and psychical processes. The author, however, maintains that it is neither the causal principle nor the concept of causality in itself, but other principles which have been supposed to be inseparably connected with or else falsely identified with the causal principle, which have led to this inference. These are the principles of the conservation of energy and the self-containedness of physical causation. Before examining their

extent and validity, the weakness of parallelism is exposed by considering some of its inevitable consequences.

Amongst its unacceptable consequences are the automaton theory and psychological atomism ('pluralistische Seelenlehre,' p. 208 et seq.), the first of which cannot be escaped as some 'idealistisch-denkender Parallelister' would have us believe by a reference to the idealistic metaphysical foundation of their theories; nor by critical or neutral monism, which involves a perpetual oscillation between the idealistic and realistic standpoints according to the requirements of the situation (Riehl). The unity of consciousness, it is maintained, demands an unified subject, the basis of which is a soul-substance; and the author quotes with approval similar views of Professors James and Ladd. He endeavors, though not quite convincingly, to refute two objections against the substantiality of the soul, one of which urges that the soul itself must be extended, the other requiring a 'seat' of this substance. He points to the inconsistencies of thinkers like Wundt and Paulsen, who, while denying the substantiality of the soul, yet fall back on the unifying and all-inclusive will as the foundation of their idealistic theories (p. 339). For what else, as he asks pertinently is this 'einheitlicher Wille,' which both Wundt and Paulsen regard as the ultimate essence of men and things in general, than the soul-substance, the manifestations of which are psychical phenomena in another aspect (p. 339)? But, indeed, it would not be easy to say what exactly the views of Wundt are in regard to the problem under discussion. Passages could readily be quoted from his writings that would tend to support equally well both interactionism and parallelism.

The mind-stuff theory is according to Professor Busse an unavoidable consequence of psychophysical parallelism, and is escaped by Riehl, Ebbinghaus and Wundt only through inconsistencies (pp. 345-378). Though not maintaining that parallelism necessitates the postulate that 'die inhaltliche Bedeutung der psychischen Vorgänge sich auf der physischen Seite wiedergeben lassen muss,' he holds there is a residuum (*Rest*) remaining on the psychical side which can be correlated with nothing on the physical. This is the synthetic activity or function of consciousness. Now psychophysical parallelism, it is argued by the author, involves that mechanical associationist psychology which resolves, or at least attempts to resolve, the whole psychical activity into a mechanism of psychoses ('Psychomen'). And there further arises the difficulty of reconciling the independence of the laws of logical thought with physico-chemical uniformity. To attempt to solve this 'antinomy' by falling back on

an original preëstablished harmony between the physical and psychical series is, of course, hopeless. The alternative, however, of either surrendering the independence of logic or giving up parallelism, will scarcely be admitted by all parallelists — nor is it demanded by all critics of parallelism — just as they will certainly not universally accept the statement that a mechanical psychology and psychophysical parallelism necessarily go hand in hand.

Seeing that the theory of parallelism is pressed with such serious difficulties, the question naturally presents itself whether some other rival view cannot maintain itself better. Why not the 'Wechselwirkungslehre'? It is held by numerous investigators that certain fundamental propositions of physical science stand in the way of its acceptance, above all the principle of the conservation of energy and its corollary, the principle of the self-sufficiency of physical causation ('Geschlossenheit der Naturkausalität.') Now if it could be shown that these laws are reconcilable with the theory of the interaction of mind and body, then not only would the strongest objections to its acceptance be removed, but the strongest arguments for the contending theory of parallelism would be simultaneously undermined.

The author examines the principle of self-containedness of physical causation first, which we think is a reversal of the correct systematic order, it being ultimately based on the principle of the conservation of energy. That the former principle is not self-evident is obvious; nor is it, according to Professor Busse, 'der Ausdruck einer erfahrungsmässig feststehender Thatsache'; nor even 'ein auf Grund eines sicheren und unanfechtbaren Induktions-schlusses aus Thatsachen der Erfahrung abgeleitet' (p. 387); but a mere prejudice or dogma, nothing more than an article of some scientists' creed, which is not proved for organic changes. Indeed we are told that the attempted proof is in some cases a *petitio principii* (p. 398); and that the principle implies in addition the concept of a finite universe, 'eine abgeschlossene Totalität des Weltganzen,' a concept quite metaphysically transcendent.

In dealing with the principle of the conservation of energy, two interpretations of it are, says the author, to be noticed and distinguished: (1) Its assertion of the constancy of energy — 'Konstanzprinzip,' (2) its assertion of equivalences of transformations of energy — 'Äquivalenzprinzip.' The principle of the constancy of energy cannot be harmonized, as he frankly admits, with any form of the doctrine of interaction. He points out (1) the groundlessness of Stumpf's attempt to regard the psychical as itself a form of energy (to which also Külpe seems inclined), as well as (2) the impossibility

of introducing the idea of a 'Wirken ohne Energieveränderung,' from which result both the double-cause and the double-effect theories (pp. 417-437) and finally (3) the untenableness of the hypothesis suggested by Sigwart and recently more than once urged again, of a 'Richtungsänderung bestehender Bewegung (oder Energie) ohne Energiezuwachs,' according to which the soul might conceivably guide or set free potential energy without increasing its actually existing amount (M. Wentscher). But there is another way out of the apparent difficulty. For according to the author the constancy of energy depends solely on the 'Geschlossenheit der Naturkausalität,' which is not proved. And the first law itself is not capable of empirical verification; for no one can actually show that the energy of the universe is constant. If it fluctuated slightly in amount, who would be the wiser? On the other hand, the principle of the equivalences of energy is quite reconcilable with the theory of interactionism, since it involves no idea of an 'abgeschlossene Totalität der Natur." Like all other laws of nature, says Professor Busse, it leaves the question undetermined what takes place when, instead of body acting on body, body acts on a soul or *vice versa*. The principle of equivalences merely asserts that where reciprocity of action exists between material things, whatever quantity of physical energy is used, is supplied (or replaced) by an equal amount of physical energy or of 'some other kind' of energy! But what sort of energy will that be which is not physical? Having once dismissed the concept of psychical energy, of which we can speak indeed only through a metaphor, as well as the idea of 'Richtungsänderung ohne Energievermehrung,' how is it possible to harmonize the 'Einwirkung des Psychischen' with the principle of equivalences or with the principle of excluded perpetuum mobile? The author's views assuredly require some further elucidation on this point. He inclines to the view which limits the validity of the last-mentioned principle to the sphere of inorganic phenomena; from which it appears to us that he fails to understand its intimate connection with the principle of the conservation of energy. Finally, notwithstanding his polemic against metaphysical propositions and dogmas, he has resort to a supernatural agency, which is one of those scientifically uncontrollable principles that will do almost anything you please. "Sicher wird der Weltgeist, wenn er der Welt im Momente, da sie stille steht, einen neuen Anstoss geben will, sich weder durch den Respekt vor dem Grundsatz der Unmöglichkeit des Perpetuum mobile, noch durch die Pariser Akademie, welche diese Unmöglichkeit aussprach, daran hindern lassen" (p. 473). As if the sole founda-

tion for this principle were a mere dictum of the French Academy of the year 1775! The author's utterances can hardly be held to be a philosophical refutation of a scientific principle; nor can his concept of a 'Weltgeist,' implying as it does that of a 'Weltganzes' also, be considered less metaphysical and dogmatic or better established than those interpretations of the principle of the conservation of energy which he sets aside.

The limitation of the perpetuum mobile principle to inorganic phenomena stands at the present time for a mere possibility which finds much of its support in the existing ignorance of the exact relations between organic and more especially between cerebral changes. Admitting what seems a rational requirement, that where psychical processes manifest themselves in connection with organic changes the latter must differ somewhat in character from those cases of physical change where no psychical factors appear, still this would by no means imply as a probable consequence that, in regard to the conservation of energy, brain changes differ in principle either from those occurring in other parts of the human organism or from those of a physico-chemical nature. No actual observations are forthcoming to render such a supposition plausible. The principle of the conservation of energy embraces the totality of measurable phenomena, and an ineluctable consequence of it is, that physical effects must be referred exclusively to physical causes by which they are completely determined. To put forward the last statement as, at least, a heuristic principle is certainly legitimate until a negative instance is indubitably established, *i. e.*, until either it is shown to be impossible to discover the physical causes of observed physical changes or a definite case of the interaction of psychical factors is proved. Professor Busse does not maintain that either has, as yet, been accomplished. The telegram-argument already urged by the author on previous occasions and again repeated (pp. 310-321) is assuredly over-worked as an argument for the indispensableness of a soul-substance, which would resolve the supposed difficulty only by introducing another.

To conclude, the arguments of the book, if not always convincing, are on the whole clearly presented, and the tone of the criticisms is objective. The style is rather diffuse, and there is some unnecessary repetition of the arguments. It is noticeable that Professor Ward's instructive discussion of psychophysical parallelism (*Naturalism and Agnosticism*, Vol. II.) is not mentioned; although the standpoints of the two thinkers seem in many respects essentially similar.

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PHILOSOPHICAL DICTIONARIES.

Vocabulaire philosophique, published in the *Bulletin de la Société française de Philosophie*, 1902-1903.

Wörterbuch der philosophischen Grundbegriffe. F. KIRCHNER. 4th ed., ed. by C. MICHAELIS. Leipzig. 1903.

The French Society for Philosophy, it is well known, arranged in 1902 for the publication of a dictionary of terms called *Vocabulaire technique et critique de la Philosophie*, to be prepared by a committee. We are now in receipt of the first four parts of the vocabulary printed in the regular issues of the *Bulletin de la Société Française de Philosophie* at intervals. The numbers already devoted to the vocabulary are Vol. ii., 7, 8 (July and August, 1902), iii., 6, 7 (June, July, 1903); they comprise the text A to C (inclusive). With the text, which has been composed so far largely by MM. Belot, Couturat, Delbos, Lalande, there is printed term by term the remarks, criticisms, and suggestions of a large number of other authorities, including many of the best known writers of France. The sections before us comprise in the aggregate 136 two-column pages from which we may estimate the entire *Vocabulaire* complete, with the comments at about 800 pages — a single handy volume.

In the first part the editors print their preface and announcement, from which we 'get a line' on their intention. They distinguish four topics in what may be called the philosophical interest: Psychology, Sociology, the Normative Sciences, and Philosophy proper or Metaphysics. The vocabulary is to be devoted mainly to the two last; but it is to include the philosophical or general terms of psychology and sociology, inasmuch as philosophy itself rests upon the conceptions of those more special disciplines. But the technical and special terms of psychology and sociology are to be excluded (examples given: *Myopie*, *Hyperhémie*, *Apprentissage*, *Juridiction*). The more literary usages of terms are also not taken up (e. g., *Angoisse*, *Affectation*).

The difficulty of maintaining such a rule of division is apparent in the text — quite apart from the justification of it in theory.¹ In theory

¹ E. g., *Capital* (economic) is included; it certainly is not so philosophical a conception as *Jurisdiction* (in law). *Myopia* is as eligible as the special term *Arbitre* for Luther's view of the dependence of the human will on divine Grace. Other cases of such doubtful inclusion are *Animal*, *Aura*, *Claustrophobie*, *Chrématisitique* (Landry). In this and the other criticisms which follow the present writer fully recognizes the necessity for limitation of scope in such a vocabulary, and for rigid adherence to the rule once adopted; but if the limitation in any case is arbitrary, the practical enforcement of it inevitably leads to inconsistencies.

the average demand of students and workers is no doubt safe as a measure of supply; but it is the interest of the particular user of a work which criticises it for not giving him the term which, just from the fact that he needs to look for it, is likely to lie a little beyond the line of the average; at any rate, the practical utility of such a work is, I think, in geometrical ratio to its inclusiveness.¹

Having adopted such a field of work, the editors lay down the following rules of procedure (freely translated and abridged):

1. To cite only such texts as contain a definition, or are necessary to justify a rare or doubtful meaning.

2. To give for each term its nearest foreign equivalents; and to add definition and texts in case of such foreign words only as have already become international (*Absolut*, *Archtyp*), or in cases in which the equivalence of meanings is established (*Âme*, sense of *ψυχή* in Aristotle).

3. To propose, wherever feasible, one or more roots suitable for the formation of terms for an international language (by the rules of derivation of some existing artificial language).²

4. To give historical definitions only when they correspond to expressions still to be met without explanation in contemporary writers, or are necessary to the understanding of present day meanings (*e. g.*, excluded, *Acervus*, *Adiaphorie*; included, *Achille*, *Âme du Monde*.)

And in explanation: all that might be called 'encyclopaedic' is rigidly excluded; only that is introduced which is necessary to establish and further meanings actually in use.

A work constructed by such rules and by such a committee will have undoubted value; the first fascicles prove this. The present writer, speaking as one having some experience (and as one whose *Dictionary* is frequently cited and drawn upon) finds the program essentially reasonable and fair. It joins hands, indeed, with the *Dictionary of Philos. and Psychol.* in certain features: the equivalent renderings in four languages,³ the conception of philosophy as a wider synthesis of knowledge, on one hand, and a system of valuations, on the other hand; the explicit recognition of the modern spirit, from which follows the exclusion of unnecessary historical citation and of all

¹ Of course, the bulk and cost of the larger work is the penalty of inclusiveness, as is seen in the present writer's *Dictionary*, and it is possibly enough to have one such case of extreme lexicographical 'pragmatism.'

² Esperanto is had in view: the language which is making great headway (a London journal of Esperanto has recently been established). Cf. the editor's remarks on the advisability of this feature, following an objection by M. Bernès, in the first section of the *Vocabulaire*, p. 156.

³ In which the *Dictionary's* equivalents are generally followed.

erudition in and for itself ('scholarship' put on exhibition); the inclusion of the general conceptions of science in most of its branches (*pace* the program!'); the coöperative feature, by which objectivity is gained.

Accordingly, in this preliminary notice, we may offer felicitations to the *Société de Philosophie* on the fine result of its undertaking. An exhaustive appreciation and criticism may be deferred until the later parts appear.

In the Preface to Kirchner's *Wörterbuch*, the editor gives a slight account of the author, Friederick Kirchner, who died in 1900. The present edition is described as a '*Neubearbeitung*,' so many are the changes now made. Appended is a useful *Zeittafel*, or date-list of the philosophical writers, no biographical matter being included in the text. This is an interesting way of giving the least possible, in the least space, under the head of biography. The volume should serve a good purpose to others besides 'The German Student' to whom it is dedicated.

J. M. B.

THE STANDPOINT OF EXPERIENCE.¹

The point of view of Professor Creighton in this article is fundamentally teleological. The emphasis is on the whole directed against the abstract separation of such pairs of categories as thought and experience, subject and object, knowledge and will. The subject contains the object: thought is the moving, integrating factor of experience, it is emotional and volitional as well as cognitive. The vital and all-inclusive problem of modern philosophy is that concerning the nature of experience. Whatever account is given, it cannot be referred to the facts as a test of its adequacy, for 'the nature and correct reading of the facts is the very point at issue,' since there are no fixed facts external to experience. And any attempt to determine the nature of experience before it is corrupted and transformed by thought must prove futile, because 'experience always exists for a mind and to be a mind is just to meet the object with conceptions and practical pur-

¹ Biology, which is hardly 'normative,' nor yet to be classed under Psychology or Sociology, is liberally treated (*e. g.*, *Loi de Baer*, *Bionomie*, *Atavisme*, *Accommodation*). Indeed, the *Vocabulaire* may say, *Nil scientiae a me alienum puto!* Anthropology has place (*Animisme*, *Clan*); Physics is not passed by, *Cruciale* (*expérience*), *Cinétique* (*énergie*); nor are Economics (*Capital*), Pathology (*Coprolalie*), Mathematics (*Arithmétique*), Theology (*Arbitre*). For this the *Vocabulaire* will certainly be criticised by the pedants—cf. the reviews of the *Dictionary* by Latta (*Int. Jrl. of Ethics*, 1903), and Ritchie in *Mind* (suspending this word pedant, however, in speaking of the dead).

² J. E. Creighton, 'The Standpoint of Experience,' *Philosophical Review*, XII., 6, pp. 593-602.

poses.' "We must cease to regard experience as a mere lump or matter upon which thought works *ab extra* as upon something foreign to itself." Experience is, in reality, a process of transformation and adjustment aiming at logical consistency and practical ends.

This general statement is followed by a more specific discussion in which the author makes and develops three negative propositions: (1) "Experience is not a stream of subjective processes, existing as mental modifications in a particular thing called mind." In order for there to be any experience, the object has somehow to be brought into connection with the subject.-- Historical criticism of philosophy shows that this cannot be done if we set the contents of experience over against the experience itself. 'There is no independent object outside of thought' and there is no thought in itself existing in abstraction from the contents of the experience. (2) "The relation of subject and object in experience cannot be adequately expressed in terms of cause and effect." For the causality category postulates the mind as a 'consciousness-thing' receiving impressions from independent external objects. But this is a relation that was shown to be untenable in (1). It is obvious then that when we abandon the causal standpoint and admit that subject and object are related in a more essential and intimate way, we are throwing aside interactionism, parallelism, and the copy or representative theory of knowledge. (3) "The mind is not one particular thing separated from other things but as a true individual contains within itself the principle of universality." "The mind is able in one indivisible act to differentiate itself from things and to relate them in the unity of its own life." Thus taking our standpoint within experience we find that we have no problem of uniting subject and object. "Experience is at once both subject and object."

He then contrasts this internal standpoint with that of the special sciences which regard experience as 'a collection of objects over against the scientific observer.' Thought works upon these objects in an external way. But this is not experience as we actually live it, nor is it the experience with which philosophy has to do. The actual experience is 'a living process of thought and the being of the world.' The internal point of view is teleological. Objects are related to us through our ideas; they are bound up with our feelings and practical purposes. Reality is a means of realizing our complete interests, practical, scientific, ethical, æsthetic. Nor does this view destroy the objective character of reality as it may seem to do upon first consideration. For, after all, the purposes of the subject are real only as de-

terminated by the concrete situation. Our purposes transform the facts and in turn the facts give shape to our purposes. The process of experience is thus an organic interplay of the two.

The rest of the article seeks to establish the transcendent character of self-consciousness, and in so doing it is concerned with the interpretation and criticism of the proposition which asserts that mind is a function of the object; that subject and object are simply functions in experience. First, the author says it is pertinent to ask what is the whole of which they are the functions, and the reply is that the concrete experience is that whole. To consider subject and object as ontological distinctions is to hypostatize them. But the author contends that this organic view can be held only from the internal standpoint, that is, 'it is only in virtue of self-consciousness that we are able to speak of experience as an organic unity.' Self-consciousness is thus 'unique and all-important.' "By becoming conscious of the objective relations and of its own life in connection with these relations, it thus raises itself above the mere process of experience."

But in this statement is not the author arguing against himself? For to say that self-consciousness is something more than experience is to say that after all the standpoint of experience is not the 'all-inclusive' problem of philosophy. More than that, the author is himself abandoning the internal standpoint of experience, for he is looking from the standpoint of self-consciousness out upon experience. Surely, nothing is gained by postulating another subject back of the subject for that only raises again the original difficulty of relating this ulterior subject to an object. From an 'internal' standpoint subject and object are organically related on his own statement, but this introduction of a 'unique and all-important self-consciousness' denies to the subject, what is asserted to be necessary of the object — that each must be interpreted in terms of the other. From the standpoint of the earlier part of the paper, subject and object are what they are only in and through each other. "Not only is there no object without a subject but it is equally true that there is no subject without an object." 'Experience is at once both subject and object' from the internal standpoint. Subject and object "are two inseparable elements within experience itself." "Experience is the living process of thought and the being of the world." From the standpoint of the last four pages of the paper, the object is what it is only because of its relations to the subject; but the reality of the subject has to be backed up by a transcending principle called self-consciousness.

A. LILLIAN KELLOGG.

VASSAR COLLEGE.

A Critique of 'Fusion.' I. MADISON BENTLEY. American Journal of Psychology, XIV., 3-4, pp. 60-72.

Systematic psychology stands in need of the concept 'fusion' not only as a means of organizing the results of psychological analyses of the last twenty years but as a setting to a new mass of experimental data. The term has played an important part since the time of Herbart, who first gave it a psychological application, but at present it is so woefully ambiguous that an historical criticism seems necessary. For Herbart, fusion was an hypothetical reconciliation of the two antagonistic tendencies of mind, unity and opposition, the process of welding opposing ideas, taking place the more or less readily according as the ideas were more or less similar. Herbart made his conclusions the basis of an explanation of tonal complexes which is significant now only from an historical standpoint as the initiatory movement in this direction. Volkmann saw a contradiction in this notion of a synthesis of unlike ideas and substituted the conception of acts of ideation which since they are not qualitatively different only inhibit each other while their residua fuse into one act. However, this obviously did not settle the point at issue, namely, qualitative fusion. Theodor Lipps held that the coalescence was due to the limitation of mental force; that it was essential if the ideas were to be brought to consciousness that they sacrifice independence to coalescence ('total fusion'). The degree to which ideas will fuse depends upon their likeness, intensity, attention, practice. Besides total fusion there is a 'continuous fusion,' a coincidence of total fusion and of slight qualitative independence, which underlies spatial and temporal perception. H. Ebbinghaus accepted the idea of total fusion but held that it was the nervous processes which fused, thus giving rise in consciousness to a single content which may be analyzed. In C. Stumpf's interpretation there is a radical change. Fusion is now defined as the union of sensational contents so as to form not a sum merely but a more or less organic whole made up of distinguishable but inseparable parts. It depends entirely upon the qualitative moment, not upon intensity, attention, etc. Consonance and fusion are identical. Stumpf's discussion is largely confined to tonal complexes. Külpe extended the term to other than auditory sensations and to emotions and impulses. Fusion and colligation are coördinate; the former refers to the combination of elements qualitatively different, the latter to the combination of elements which differ in duration and extension. For Wundt fusion is a function of apperception; it is a fundamental form of simultaneous association.

So much for the historical résumé. The author now explains

fusion in terms of qualitative incorporation, of which the peculiarity is 'their unitariness, their organization, and the presence of unique characteristics not to be found in the incorporated elements.' "It is the direct apposition of qualities without the introduction of spatial or temporal connectives." It is not identical therefore with consonance as Stumpf held it to be, 'for consonance is only one of several moments that contribute to the unity of the tonal complex.' Nor is the fusion of Ebbinghaus, which is the converse of analysis, identifiable with this interpretation. Wundt's type is not synonymous, because it covers space and demands a dominating element. What is derived from the history of the conception of fusion is first the "Herbartian doctrine of the closer and more remote union of ideas; from Stumpf a mass of empirical data regarding the structure of sensational complexes; Külpe gives thus a systematic setting of the facts, and Wundt acquaints us with the enormous influence of attention upon the synthesis of mental formations. And these are all indispensable data for a complete doctrine of fusion."

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EXPERIMENTAL.

The Relation of Motor Power to Intelligence. T. L. BOLTON,
American Journal of Psychology, XIV., 351-367.

This paper, suggested by the evolutionary theory of motor development, is an attempt to show that tests of motor power may be used as measures of intelligence or of mental alertness. A large number of good and poor children of eight and nine years of age were tested with regard to the following points: (1) Rapidity of voluntary control as determined by the number of taps made in five trials of five seconds each; (2) steadiness in standing as shown by the ataxiagraph; (3) steadiness and precision of movement with either hand as tested by passing a needle between strips of brass. All of the tables show strikingly that with brighter children, motor power increases with age. Poor children show slight advance. In fact, in the precision test, the eight-year children of this class surpassed those of nine years by as much as the nine-year-old bright children surpassed those of eight years in the same class. Moreover, the bright children showed increasing power of growth through practice and increasing power to resist fatigue. The poor children became fatigued very quickly.

In the PSYCHOLOGICAL REVIEW for July, 1903, R. L. Kelly publishes a set of experiments, which, though different, bring out practi-

cally the same results as those of Dr. Bolton. Experiments such as these are valuable as preliminary work. They should lead to a more careful analysis of the problem and to a separation of the many factors involved. The problem of individual differences is so complicated that much careful experimentation is needed before pedagogical applications can safely be made.

WINIFRED HYDE.

BRYN MAWR COLLEGE.

Die reproducierte Vorstellung beim Wiedererkennen und beim Vergleichen. A. MCC. GAMBLE und MARY WHITON CALKINS. Ziet. f. Psych. u. Phys. d. Sinnesorgane, Band 32, S. 177 und Band 33, S. 161.

This work was done at Wellesley College. The first part gives an account of the authors' attempt to repeat Lehmann's experiment in which he sought to prove that recognition rests upon associated thoughts alone. Some slight variations were introduced in his method. Three practiced and twenty-one unpracticed reagents were given an average of 47 odors and they were instructed to write down in serial order all the thoughts which each odor called up in mind, to mark every pause in the course of the thoughts that were reproduced, to note the odor as known or unknown and to underscore the name when it occurred to them. The outcome is brought together in a summary at the end, the main points of which are: Recognition does not rest upon reproduced thoughts: (1) Since such accompanying thoughts, which are not only clear, but correct, are often present in the consciousness of the unknown; (2) since associations, clear enough to be reproduced, are not present in all cases, where recognition is distinct; and (3) since in the cases in which the reagents noted the serial order they generally declared that the accompanying thoughts followed the recognition. The question of the essential nature of recognition must remain inaccessible for statistical treatment. The analysis of the result "leads to the conviction that 'unknownness' is a clear and positive conscious content and not merely the absence of recognition."

The second part deals with the importance of names for the consciousness of likeness and of difference. This experiment also was a repetition with modifications of one by Lehmann. The particular purpose was to avoid certain sources of error which are pointed out in Lehmann's work. There are two parts. In the first comparisons were made between the members of several graduated series of gray and blue papers and of colored fluids, and in the second odors divided in two groups were compared with one another. Each member of

the series was compared with itself and each member of the series. The odors the reagent pronounced 'like' or 'different' and the colors 'like,' 'brighter' or 'darker.' The reagents learned names for one of the groups of each series. The purpose was then to determine whether the names assisted in making the identification or the discrimination. The important conclusions are: (1) Associated word representations are neither essential for the consciousness of likeness nor for that of difference; (2) in experiments of this kind such word representations have a tendency to accentuate the consciousness of difference and to inhibit the consciousness of likeness. "The experiments belonging to this part of the work are moreover closely bound up with the problems of the first part. Since it is indifferent whether the consciousness of likeness is identical, or not, with that of knownness, nevertheless the two are closely connected. Therefore if to the consciousness of likeness word representations are in no wise necessary, then one can scarcely declare that the consciousness of knownness needs such word representations. Accordingly the preceding investigation concerning the importance of word representations confirms the conclusion that recognition rests not entirely upon reproduced thoughts."

T. L. BOLTON.

Blickrichtung und Grössenschätzung. ALFRED GUTTMANN. *Zeitschrift f. Psych. u. Physiol. der Sinnesorgane*, XXXII., 333-345.

Apropos to the theory of the moon illusion, experiments patterned in the main after those of Zoth were arranged to determine whether the mere elevation or depression of the line of regard modified the apparent size of terrestrial objects. Uncertainty as to distance was eliminated by exposing the objects observed on a perimeter. The author's average error in setting pairs of lines so that a pair at the center of the perimeter should appear equal to a pair 40° above the center was 3.66 per cent. of their total separation. Depression of the line of regard, on the contrary, gave practically no error. A comparison of circular areas produced by iris diaphragms showed a similar underestimation of the area exposed 40° above the center, amounting to 3.53 per cent. of its total diameter.

While these errors, even if further experiments permitted their generalization, are too insignificant to account for the moon illusion, they have no little interest of their own. Methodologically it should be remembered that the extreme position of the eyeball is an artificial condition that would seldom occur and never be maintained in normal vision, even when observing an object at the zenith.

RAYMOND DODGE.

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BOOKS RECEIVED FROM FEBRUARY 7 TO MARCH 7.

- Descartes Directeur Spirituel. Correspondances avec la Princesse Palatine et la Reine Christine de Suède.* V. DE SWARTE. Préf. par E. BOUTROUX. Paris, Alcan, 1904. Pp. 292. 4 fr. 50.
- The Educational Theory of Immanuel Kant.* Trans. and ed. by E. F. BUCHNER. Lippincott Educational Series. Philadelphia and London, 1904. Pp. xiv + 309. [Most fittingly issued on the Kant anniversary, February 12. The editor's Introduction occupies 97 pages.]
- La Parole intérieure.* V. EGGER. 2^d ed. revised, with a new preface. Paris, Alcan, 1904. Pp. vii + 324. 5 fr. [A reproduction of the first edition (1881) with little change.]
- L'Absolu, forme pathologique et normale des sentiments.* L. DUGAS. Paris, Alcan, 1904. Pp. 183. 2 fr. 50.
- System des religiösen Materialismus.* I. Wissenschaft der Seele. H. THODEN VAN VELZEN. Leipzig, O. R. Reisland, 1903. Pp. x + 467.
- Annual Report of the Surgeon-General of the Public Health and Marine-Hospital Service of the United States for the Year 1902.* Washington, Gov. Printing Off., 1903. Pp. 487.
- Index Philosophique: Philosophie et Sciences Annexes.* N. VASCHIDE & VON BUSCHAN. 1^{re} Année, 1902. Paris, C. Naud, 1903. Pp. x + 345. [Contains 4,623 titles covering a wide field and arranged under 54 subject-headings, or 70 including subdivisions; the classification appears convenient for reference and is in general logical, though the reason for placing Epistemology, Logic, and Metaphysics at the very end of the list is not clear. The compilation and proof-reading is remarkably thorough, the only noticeable blemish being the irregularity in the use of the German 'Umlaut,' *e* being sometimes but not always substituted.—H. C. W.]
- The Evolution of Theology in the Greek Philosophers.* ED. CAIRD. Gifford Lectures. 2 vols. New York, Macmillans, 1904. Pp. xvii + 382, and xii + 377.

NOTES AND NEWS.

WE note that psychology in America has significantly reached the *Festheft* stage, as witnessed by the appearance of the 'Commemorative Number' of the *American Journal of Psychology*, July-October, 1903, in honor, for the most part, of President G. Stanley Hall's services to the science. (Note added by E. F. Buchner to his article on 'Psychological Progress' in our last issue, but received too late for insertion).

SIR LESLIE STEPHEN, the English essayist, philosopher, biographer and editor, died on February 22, aged 72, at his home in London.

PROFESSOR JAMES WARD has accepted this invitation given him by the University of California to lecture in the summer session at Berkeley. He expects to reach this country about the middle of May or thereabouts. His address is: 6 Selwyn Gardens, Cambridge, England.

THE Kant Centenary was celebrated on February 12th with more or less elaborateness at various places. The Königsberg program included the unveiling of a tablet by the Prussian Minister of Education, Dr. Studt, a message from the Emperor, a donation from the public treasury of \$2,500 for the 'teacher's aid fund,' and the founding by the town of Königsberg of a prize for philosophical essays. At a special meeting of the British Academy Dr. Shadworth Hodgson read a paper on Kant. An interesting program was carried out at the University of Alabama under the direction of Professor Buchner, whose book *Kant's Educational Theory* was also issued by the Lippincotts appropriately on the centennial day. At Columbia University Dr. Felix Adler gave an address.

THE second International Congress of Philosophy will be held at Geneva, September 4-8, 1904, under the Hon.-Presidency of E. Naville, and the Presidency of J. J. Gourd. There will be both general and sectional meetings (five sections). Communications may be addressed to M. le Dr. Ed. Claparède, 11, Champel, Geneva, Switzerland. Details of the program will be published later on.

AN official account of 'the origin and purpose of the [British] Sociological Society' has been issued by the provisional committee. The Society has been organized and its work begun. The Chairman of the large provisional committee was Mr. E. W. Brabrook; the Hon. Sec. of the Society is Victor V. Branford (5 Old Queen St., Westminster, E. C., London).

THE Southern Society for Philosophy and Psychology was organized February 23 at Atlanta, Ga. Its officers are: President, Professor J. Mark Baldwin, Johns Hopkins University; secretary-treasurer, Professor Edward Franklin Buchner, University of Alabama; council, the president, the secretary, Dr. William T. Harris, Washington, D. C., Mr. Reuben Post Halleck, Louisville, Ky., and Professor A. Casewell Ellis, University of Texas. The aim of the organization is to promote the welfare of philosophy and psychology in southern institutions.¹ E. F. BUCHNER, *Sec.*

THE following items have appeared in the papers:

PROFESSOR BENNO ERDMANN, of Bonn, has been called to the University of Tübingen.

PROFESSOR EDWARD ZELLER, the famous historian of Greek philosophy, has just celebrated his ninetieth birthday (January 22).

PROFESSOR FRANK THILLY, of the University of Missouri, has been called to the chair of psychology at Princeton University, made vacant by the resignation of Professor J. Mark Baldwin.

MR. W. H. DAVIS (Princeton, A.B.), Fellow of Columbia University, has been appointed instructor in philosophy at Lehigh University. Professor Lightner Witmer will continue to serve another year as acting professor in that institution.

W. G. SMITH, Ph. D., of King's College, London, has accepted the position of Lecturer in Experimental Psychology in the University of Liverpool.

DR. C. S. MYERS, of Cambridge, has been made Lecturer in Experimental Psychology in Dr. Smith's place at King's College, London.

PRESIDENT CARL A. SWENSSON, of Bethany College, Lindborg, Kan., who for many years occupied the chair of psychology and philosophy at that institution, died on February 16.

THE following promotions have recently been made at Teachers' College, Columbia University: Dr. Edward L. Thorndike, from adjunct professor of psychology to professor; Dr. John Angus MacVannel from instructor in the philosophy of education to adjunct professor.

CONTENTS OF JANUARY-FEBRUARY MAGAZINES.

REVUE DE MÉTAPHYSIQUE ET DE MORALE, XII., 4. La morale de Renouvier: *A. Darlu*. Les principes des mathématiques. I. Principes de la Logique: *L. Couturat*. Le Devenir et l'idéal social

à propos d'une brochure récente : *F. Rauh*. La Démocratie devant la science : *Bouglé*. Sur la théorie géométrique du Général de Tilly : *G. Lechalas*. Vers le positivisme absolu par l'idéalisme par Louis Weber : *E. Chartier*. L'idée de Patrie. *A. Fouillée*. La langue universelle : *A. Lalande*. Nécrologie. Livres nouveaux. Revues et périodiques. Thèses de doctorat.

REVUE PHILOSOPHIQUE. Le cynisme : Étude psychologique : *E. Tardieu*. Le caractère de l'histoire : *Xenopol*. La logique et l'expérience : *F. Le Dantec*. A propos de l'érotomanie des mystiques chrétiens : *J. H. Leuba*. La morale et les mœurs, d'après M. Lévy-Bruhl : *P. Fauconnet*. Analyses et comptes rendus. Revue des Périodiques étrangers. Nécrologie.

BEITRÄGE ZUR PSYCHOLOGIE DER AUSSAGE, I., 3. Die Aussage als geistige Leistung und als Verhörsprodukt : *William Stern*, (I.).

ARCHIV FÜR GESCHICHTE DER PHILOSOPHIE, XVII., 17. Weitere Beiträge zur Lebensgeschichte George Berkeleys : *Theodor Lorenz*. Sur une prétendue faute de raisonnement que Descartes aurait commise : *J. Chazottes*. Locke, eine kritische Untersuchung der Ideen des Liberalismus und des Ursprungs nationalökonomischer Anschauungsformen : *Georg Jaeger*. Entwicklung der arabischen und jüdischen Philosophie im Mittelalter : *J. Pollak*. Die Lehre von der Bildung des Universums bei Descartes : *A. Hoffman*. Jahresbericht.

JOURNAL DE PSYCHOLOGIE, I., 1. De la Valeur des Questionnaires en Psychologie : *Th. Ribot*. Note sur une communication typologique : *Th. Flournoy*. La Sensation du 'déjà vu' : *J. Gasset*. Dépersonnalisation et possession chez un psychasthénique : *F. Raymond* and *P. Janet*. Bibliographie. Psychologie pathologique.

AMERICAN JOURNAL OF PSYCHOLOGY, XV., 1. A Theory of Time Perception : *W. P. Montague*. Auditory Tests : *Benjamin Richard Andrews*. Some New Apparatus : *E. B. Titchener*. Ebbinghaus' Explanation of Beats : *I. M. Bentley* and *E. B. Titchener*. The Proof and Measurement of Association between Two Things : *C. Spearman*. Professor Cattell's Statistics of American Psychologists : *I. M. Bentley*. Nocturnal Emissions. Literature.

PROCEEDINGS OF THE SOCIETY FOR PSYCHICAL RESEARCH, XVIII., 47. Proceedings of General Meetings. On the Types of Phenomena Displayed in Mrs. Thompson's Trance : *J. G. Piddington*. On certain Unusual Psychological Phenomena : *John Honeyman*. Editorial Note.

JOURNAL OF MENTAL SCIENCE, I., 208. The Mental and Moral Effects of the South African War, 1890-1902, on the British People :

R. S. Stewart. The Relation of Mental Symptoms to Bodily Disease, with Special Reference to their Treatment outside Lunatic Asylums: *Nathan Raw.* Mongolian Imbecility: *C. H. Fennell.* Short History of St. Luke's Hospital: *William Rawes.* Gossip about Gheel: *Conolly Norman.* The Relationship of Wages, Lunacy and Crimes in South Wales: *R. S. Stewart.* Clinical Notes and Cases. Occasional Notes. Reviews. Motor, Visual and Applied Rhythms: *J. B. Miner.* Le Goût: *L. Marchand.* L'Imagination: *L. Dugas.* Le Mouvement: *R. S. Woodworth.* Epitome. Progress of Psychiatry in 1903. Epitome of Current Literature. Anthropology. Neurology. Physiological Psychology. Etiology of Insanity. Clinical Neurology and Psychiatry. Treatment of Insanity. Sociology. Notes and News.

ZEITSCHRIFT FÜR PSYCHOLOGIE UND PHYSIOLOGIE DER SINNES-ORGANE, XXXIV., 1. Untersuchungen über die Herabsetzung der Sehscharfe durch Blendung: *Alfred Borschke.* Untersuchungen über psychische Hemmung. 3te Artikel: *G. Heymans.* Ueber Farbenkenntnis bei Schulkindern: *Marx Lobsien.* Leib und Seele: *C. A. Strong.* Literaturbericht. XXXIV., 2. Das Geschmackvolle als Besonderheit des Schönen und speziell seine Beziehungen zum sinnlichen Geschmack: *C. M. Giessler.* Ueber die Abhängigkeit der Pupillarreaktion von Ort und Ausdehnung der gereizten Netzhautfläche: *G. Abelsdorff* und *H. Feilchenfeld.* Das Leuchtturmphänomen und die scheinbare Form des Himmelsgewölbes: *Felix Bernstein.* Literaturbericht.

REVUE PHILOSOPHIQUE, 1904, 2. L'Évolution comme principe philosophique du devenir: *Kozłowski.* Saint-Simon père du positivisme (1st article): *G. Dumas.* L'hypothèse du 'rétour éternel' devant la science moderne: *G. Batault.* Expériences sur l'activité intellectuelle: *Lapie.* Analyses et comptes rendus. Revue des périodiques étrangers.

BRITISH JOURNAL OF PSYCHOLOGY, I., 1. Editorial. On the definition of psychology: *James Ward.* On binocular flicker and the correlation of activity of 'corresponding' retinal points (two figures and twelve diagrams): *C. S. Sherrington.* A sixteenth century psychologist, Bernardino Telesio: *J. Lewis McIntyre.* The sensations excited by a single momentary stimulation of the eye (six figures and plate 1): *W. McDougall.* Note on the principle underlying Fechner's 'paradoxical experiment' and the predominance of contours in the struggle of the two visual fields: *W. McDougall.* Proceedings of the psychological society.

